

## SEQUENCE LISTING

5 <110> BASF Aktiengesellschaft

10 <120> Clp-protease as target for herbicides

<130> 20030949

15 <160> 33

20 <170> PatentIn version 3.1

25 <210> 1

<211> 591

<212> DNA

30 <213> Arabidopsis thaliana

35 <220>

<221> CDS

<222> (1)..(591)

40 <223>

45 <400> 1

atg cct att ggc gtt cca aaa gta cct ttt cga agt cct gga gaa gga	48
Met Pro Ile Gly Val Pro Lys Val Pro Phe Arg Ser Pro Gly Glu Gly	
1 5 10 15	

50 gat aca tct tgg gtt gac ata tac aac cga ctt tat cga gaa aga tta 96

Asp Thr Ser Trp Val Asp Ile Tyr Asn Arg Leu Tyr Arg Glu Arg Leu	
20 25 30	

55 ttt ttt tta ggc caa gag gtt gat acc gaa atc tcg aat caa ctt att 144

Phe Phe Leu Gly Gln Glu Val Asp Thr Glu Ile Ser Asn Gln Leu Ile	
35 40 45	

60 agt ctt atg ata tat ctc agt ata gaa aag gat acc aaa gat ctt tat 192

Ser Leu Met Ile Tyr Leu Ser Ile Glu Lys Asp Thr Lys Asp Leu Tyr	
50 55 60	

65 ttg ttt ata aac tct cct ggt gga tgg gta ata tct gga atg gct att 240

Leu Phe Ile Asn Ser Pro Gly Gly Trp Val Ile Ser Gly Met Ala Ile	
65 70 75 80	

tat gat act atg caa ttt gtg cga ccc gat gta cag aca ata tgc atg 288

## 2

	Tyr	Asp	Thr	Met	Gln	Phe	Val	Arg	Pro	Asp	Val	Gln	Thr	Ile	Cys	Met	
				85						90					95		
5	gga	ttg	gcc	gct	tca	ata	gca	tcc	ttt	atc	cta	gtc	gga	gga	gca	att	336
	Gly	Leu	Ala	Ala	Ser	Ile	Ala	Ser	Phe	Ile	Leu	Val	Gly	Gly	Ala	Ile	
				100					105					110			
10	acc	aaa	cgt	ata	gca	ttc	cct	cac	gct	agg	gta	atg	atc	cat	caa	ccc	384
	Thr	Lys	Arg	Ile	Ala	Phe	Pro	His	Ala	Arg	Val	Met	Ile	His	Gln	Pro	
			115					120					125				
15	gct	agt	tcg	ttt	tat	gag	gca	caa	acg	gga	gaa	ttt	atc	ttg	gaa	gcg	432
	Ala	Ser	Ser	Phe	Tyr	Glu	Ala	Gln	Thr	Gly	Glu	Phe	Ile	Leu	Glu	Ala	
			130				135					140					
	gaa	gaa	tta	ctt	aaa	ctt	cgc	gaa	acc	atc	aca	agg	gtt	tat	gta	caa	480
	Glu	Glu	Leu	Leu	Lys	Leu	Arg	Glu	Thr	Ile	Thr	Arg	Val	Tyr	Val	Gln	
	145					150					155					160	
20	aga	acg	ggc	aaa	cct	ata	tgg	gtt	ata	tcc	gaa	gac	atg	gaa	cgg	gat	528
	Arg	Thr	Gly	Lys	Pro	Ile	Trp	Val	Ile	Ser	Glu	Asp	Met	Glu	Arg	Asp	
				165						170					175		
25	gtt	ttt	atg	tca	gca	aca	gaa	gcc	caa	gct	cat	gga	att	gtt	gat	ctt	576
	Val	Phe	Met	Ser	Ala	Thr	Glu	Ala	Gln	Ala	His	Gly	Ile	Val	Asp	Leu	
				180					185					190			
30	gta	gcg	gtt	caa	taa												591
	Val	Ala	Val	Gln													
			195														
	<210> 2																
35	<211> 196																
	<212> PRT																
40	<213> Arabidopsis thaliana																
	<400> 2																
45	Met	Pro	Ile	Gly	Val	Pro	Lys	Val	Pro	Phe	Arg	Ser	Pro	Gly	Glu	Gly	
	1				5					10					15		
50	Asp	Thr	Ser	Trp	Val	Asp	Ile	Tyr	Asn	Arg	Leu	Tyr	Arg	Glu	Arg	Leu	
				20					25					30			
55	Phe	Phe	Leu	Gly	Gln	Glu	Val	Asp	Thr	Glu	Ile	Ser	Asn	Gln	Leu	Ile	
			35					40					45				
60	Ser	Leu	Met	Ile	Tyr	Leu	Ser	Ile	Glu	Lys	Asp	Thr	Lys	Asp	Leu	Tyr	
		50					55					60					
	Leu	Phe	Ile	Asn	Ser	Pro	Gly	Gly	Trp	Val	Ile	Ser	Gly	Met	Ala	Ile	
	65					70					75					80	

Tyr Asp Thr Met Gln Phe Val Arg Pro Asp Val Gln Thr Ile Cys Met.  
 85 90 95

5 Gly Leu Ala Ala Ser Ile Ala Ser Phe Ile Leu Val Gly Gly Ala Ile  
 100 105 110

10 Thr Lys Arg Ile Ala Phe Pro His Ala Arg Val Met Ile His Gln Pro  
 115 120 125

15 Ala Ser Ser Phe Tyr Glu Ala Gln Thr Gly Glu Phe Ile Leu Glu Ala  
 130 135 140

Glu Glu Leu Leu Lys Leu Arg Glu Thr Ile Thr Arg Val Tyr Val Gln  
 145 150 155 160

20 Arg Thr Gly Lys Pro Ile Trp Val Ile Ser Glu Asp Met Glu Arg Asp  
 165 170 175

25 Val Phe Met Ser Ala Thr Glu Ala Gln Ala His Gly Ile Val Asp Leu  
 180 185 190

30 Val Ala Val Gln  
 195

<210> 3

35 <211> 1024  
 <212> DNA  
 <213> Nicotiana tabacum

40

<220>

45 <221> CDS  
 <222> (11)..(877)  
 <223>

50

<400> 3  
 gcggccgcta atg gcg gtc act ttt ccg acc acc tct tcc tcg tat cta 49  
 55 Met Ala Val Thr Phe Pro Thr Thr Ser Ser Ser Tyr Leu  
 1 5 10

60 cac tcg aga act aaa gtc cct cag cct tct tta agc tgc gcc agc aaa 97  
 His Ser Arg Thr Lys Val Pro Gln Pro Ser Leu Ser Cys Ala Ser Lys  
 15 20 25

gtt ttt gtc gga tta aga agc caa tct cct aat tct tat ggg att gca 145  
 Val Phe Val Gly Leu Arg Ser Gln Ser Pro Asn Ser Tyr Gly Ile Ala  
 30 35 40 45

	gcg tct aat gta aat gtt gaa ttt cac aat aga gtg tac aga agt att	193
	Ala Ser Asn Val Asn Val Glu Phe His Asn Arg Val Tyr Arg Ser Ile	
5	50 55 60	
	gaa tcc gga act aga gac agt aaa cca aca cgt gta cga gtt tcc atg	241
	Glu Ser Gly Thr Arg Asp Ser Lys Pro Thr Arg Val Arg Val Ser Met	
	65 70 75	
10	atg ccc att ggg aca cca aga gta ccc tac aga aat cca act gag gga	289
	Met Pro Ile Gly Thr Pro Arg Val Pro Tyr Arg Asn Pro Thr Glu Gly	
	80 85 90	
15	aca tgg cag tgg gtt gat ttg tgg aat gct ctt tac cgt gaa cgt gtt	337
	Thr Trp Gln Trp Val Asp Leu Trp Asn Ala Leu Tyr Arg Glu Arg Val	
	95 100 105	
20	att ttc atc gga caa cac ata gat gaa gaa ttt agc aac cag ata ttg	385
	Ile Phe Ile Gly Gln His Ile Asp Glu Glu Phe Ser Asn Gln Ile Leu	
	110 115 120 125	
25	gca aca atg ctg tat ctt gac agt att gat gat tcc aag aag ctc tac	433
	Ala Thr Met Leu Tyr Leu Asp Ser Ile Asp Asp Ser Lys Lys Leu Tyr	
	130 135 140	
	ctg tat atc aat ggc cct ggt ggt gat cta act cca agc atg gcc atc	481
	Leu Tyr Ile Asn Gly Pro Gly Gly Asp Leu Thr Pro Ser Met Ala Ile	
	145 150 155	
30	tac gac aca atg caa agt ctt aaa agt gct gtt ggc acc cat tgt gtg	529
	Tyr Asp Thr Met Gln Ser Leu Lys Ser Ala Val Gly Thr His Cys Val	
	160 165 170	
35	ggc tat gcc tac aat ctt gcc ggt ttt ctt ctt gct gct gga gaa aag	577
	Gly Tyr Ala Tyr Asn Leu Ala Gly Phe Leu Leu Ala Ala Gly Glu Lys	
	175 180 185	
40	ggc aat cga ttt gca atg cct ctt tca agg att gca cta caa tct cca	625
	Gly Asn Arg Phe Ala Met Pro Leu Ser Arg Ile Ala Leu Gln Ser Pro	
	190 195 200 205	
45	gct gga gct gcg cgc gga cag gct gat gat att cgc aat gaa gca gat	673
	Ala Gly Ala Ala Arg Gly Gln Ala Asp Asp Ile Arg Asn Glu Ala Asp	
	210 215 220	
	gaa ctt ctc aga att aga gat tac ctt ttc aag gag ttg gct gag aag	721
	Glu Leu Leu Arg Ile Arg Asp Tyr Leu Phe Lys Glu Leu Ala Glu Lys	
	225 230 235	
50	aca ggc cag cct gtt gaa aag gtt cac aag gat tta agt cgg atg aag	769
	Thr Gly Gln Pro Val Glu Lys Val His Lys Asp Leu Ser Arg Met Lys	
	240 245 250	
55	cga ctc aat gct caa gaa gct ctt gaa tat ggt ctt ata gac cgt ata	817
	Arg Leu Asn Ala Gln Glu Ala Leu Glu Tyr Gly Leu Ile Asp Arg Ile	
	255 260 265	
60	gtt agg cct ccc cgt att aag gca gat gct cca cga aag gat acc aca	865
	Val Arg Pro Pro Arg Ile Lys Ala Asp Ala Pro Arg Lys Asp Thr Thr	
	270 275 280 285	
	gca ggt ctt ggt tagtccatac acatcgtata atttatggct gatagtgggt	917
	Ala Gly Leu Gly	

gtacgacttg cagtgttatt ttgcaatttc ttttgtttaa tctacatatt gaactotttt 977  
 gatctactta ttcaaaaaca tgaaatcctg agcagactag cggccgc 1024  
 5  
 <210> 4  
 <211> 289  
 10 <212> PRT  
 <213> Nicotiana tabacum  
 15  
 <400> 4  
 20 Met Ala Val Thr Phe Pro Thr Thr Ser Ser Ser Tyr Leu His Ser Arg  
 1 5 10 15  
 Thr Lys Val Pro Gln Pro Ser Leu Ser Cys Ala Ser Lys Val Phe Val  
 20 25 30  
 25 Gly Leu Arg Ser Gln Ser Pro Asn Ser Tyr Gly Ile Ala Ala Ser Asn  
 35 40 45  
 30 Val Asn Val Glu Phe His Asn Arg Val Tyr Arg Ser Ile Glu Ser Gly  
 50 55 60  
 35 Thr Arg Asp Ser Lys Pro Thr Arg Val Arg Val Ser Met Met Pro Ile  
 65 70 75 80  
 40 Gly Thr Pro Arg Val Pro Tyr Arg Asn Pro Thr Glu Gly Thr Trp Gln  
 85 90 95  
 Trp Val Asp Leu Trp Asn Ala Leu Tyr Arg Glu Arg Val Ile Phe Ile  
 100 105 110  
 45 Gly Gln His Ile Asp Glu Glu Phe Ser Asn Gln Ile Leu Ala Thr Met  
 115 120 125  
 50 Leu Tyr Leu Asp Ser Ile Asp Asp Ser Lys Lys Leu Tyr Leu Tyr Ile  
 130 135 140  
 55 Asn Gly Pro Gly Gly Asp Leu Thr Pro Ser Met Ala Ile Tyr Asp Thr  
 145 150 155 160  
 60 Met Gln Ser Leu Lys Ser Ala Val Gly Thr His Cys Val Gly Tyr Ala  
 165 170 175  
 Tyr Asn Leu Ala Gly Phe Leu Leu Ala Ala Gly Glu Lys Gly Asn Arg  
 180 185 190

5 Phe Ala Met Pro Leu Ser Arg Ile Ala Leu Gln Ser Pro Ala Gly Ala  
 195 200 205  
 Ala Arg Gly Gln Ala Asp Asp Ile Arg Asn Glu Ala Asp Glu Leu Leu  
 210 215 220  
 10 Arg Ile Arg Asp Tyr Leu Phe Lys Glu Leu Ala Glu Lys Thr Gly Gln  
 225 230 235 240  
 15 Pro Val Glu Lys Val His Lys Asp Leu Ser Arg Met Lys Arg Leu Asn  
 245 250 255  
 20 Ala Gln Glu Ala Leu Glu Tyr Gly Leu Ile Asp Arg Ile Val Arg Pro  
 260 265 270  
 25 Pro Arg Ile Lys Ala Asp Ala Pro Arg Lys Asp Thr Thr Ala Gly Leu  
 275 280 285  
 Gly  
 30 <210> 5  
 <211> 1124  
 35 <212> DNA  
 <213> Arabidopsis thaliana  
 40 <220>  
 <221> CDS  
 45 <222> (2)..(931)  
 <223>  
 50 <400> 5  
 a atg gag atg agt ttg cgt ctc gct tca tct tca acc tca aac cca att 49  
 Met Glu Met Ser Leu Arg Leu Ala Ser Ser Ser Thr Ser Asn Pro Ile  
 1 5 10 15  
 55 tgt cta cta aac cct gga aaa aac ctt aat ttc cca atc cga aac cat 97  
 Cys Leu Leu Asn Pro Gly Lys Asn Leu Asn Phe Pro Ile Arg Asn His  
 20 25 30  
 60 aga atc cct aaa act tcg aaa ccc ttt tgc gtt agg tct tca atg agc 145  
 Arg Ile Pro Lys Thr Ser Lys Pro Phe Cys Val Arg Ser Ser Met Ser  
 35 40 45  
 ttg tct aaa cca ccc aga caa acc tta tct agt aac tgg gat gta tct 193

	Leu	Ser	Lys	Pro	Pro	Arg	Gln	Thr	Leu	Ser	Ser	Asn	Trp	Asp	Val	Ser	
	50						55					60					
5	agc	ttc	tcc	att	gat	tcc	gtt	gct	caa	tct	cct	tca	aga	ctc	cca	agt	241
	Ser	Phe	Ser	Ile	Asp	Ser	Val	Ala	Gln	Ser	Pro	Ser	Arg	Leu	Pro	Ser	
	65					70				75						80	
10	ttc	gaa	gaa	ctc	gat	acc	acc	aac	atg	ttg	ctc	cgt	caa	aga	atc	gtc	289
	Phe	Glu	Glu	Leu	Asp	Thr	Thr	Asn	Met	Leu	Leu	Arg	Gln	Arg	Ile	Val	
					85					90					95		
15	ttt	ttg	ggt	tct	cag	gtt	gat	gat	atg	acg	gcg	gat	ttg	gtt	ata	agt	337
	Phe	Leu	Gly	Ser	Gln	Val	Asp	Asp	Met	Thr	Ala	Asp	Leu	Val	Ile	Ser	
				100					105					110			
20	cag	cta	ttg	tta	cta	gat	gct	gag	gac	tca	gaa	aga	gac	att	acg	ctt	385
	Gln	Leu	Leu	Leu	Leu	Asp	Ala	Glu	Asp	Ser	Glu	Arg	Asp	Ile	Thr	Leu	
			115					120					125				
25	ttt	atc	aat	tca	ccc	ggt	gga	tct	att	act	gct	ggg	atg	gga	ata	tat	433
	Phe	Ile	Asn	Ser	Pro	Gly	Gly	Ser	Ile	Thr	Ala	Gly	Met	Gly	Ile	Tyr	
		130					135						140				
30	gat	gca	atg	aaa	caa	tgt	aag	gcg	gat	gta	tct	act	gtt	tgc	tta	ggg	481
	Asp	Ala	Met	Lys	Gln	Cys	Lys	Ala	Asp	Val	Ser	Thr	Val	Cys	Leu	Gly	
	145					150					155					160	
35	tta	gct	gca	tct	atg	ggt	gcg	ttt	ctt	ctt	gct	tct	ggt	tca	aaa	ggg	529
	Leu	Ala	Ala	Ser	Met	Gly	Ala	Phe	Leu	Leu	Ala	Ser	Gly	Ser	Lys	Gly	
					165					170					175		
40	aaa	cgg	tat	tgt	atg	cct	aac	tct	aaa	gtt	atg	atc	cat	cag	cca	ctt	577
	Lys	Arg	Tyr	Cys	Met	Pro	Asn	Ser	Lys	Val	Met	Ile	His	Gln	Pro	Leu	
				180					185					190			
45	ggt	act	gct	gga	ggc	aaa	gca	acg	gaa	atg	agc	ata	cgt	ata	aga	gaa	625
	Gly	Thr	Ala	Gly	Gly	Lys	Ala	Thr	Glu	Met	Ser	Ile	Arg	Ile	Arg	Glu	
			195					200					205				
50	atg	atg	tac	cac	aag	att	aaa	ctt	aac	aaa	atc	ttc	tct	aga	atc	act	673
	Met	Met	Tyr	His	Lys	Ile	Lys	Leu	Asn	Lys	Ile	Phe	Ser	Arg	Ile	Thr	
		210					215					220					
55	ggg	aag	cct	gaa	tca	gag	atc	gaa	agt	gac	aca	gac	cgt	gat	aac	ttc	721
	Gly	Lys	Pro	Glu	Ser	Glu	Ile	Glu	Ser	Asp	Thr	Asp	Arg	Asp	Asn	Phe	
	225					230				235						240	
60	ttg	aat	cca	tgg	gag	gcg	aaa	gaa	tat	ggt	ttg	atc	gac	gct	gta	atc	769
	Leu	Asn	Pro	Trp	Glu	Ala	Lys	Glu	Tyr	Gly	Leu	Ile	Asp	Ala	Val	Ile	
				245						250					255		
65	gat	gat	ggg	aaa	cgg	gga	cta	atc	gct	cca	att	gga	gat	ggt	act	cct	817
	Asp	Asp	Gly	Lys	Pro	Gly	Leu	Ile	Ala	Pro	Ile	Gly	Asp	Gly	Thr	Pro	
				260					265					270			
70	cct	cct	aaa	acc	aaa	gtc	tgg	gat	ctt	tgg	aaa	gtc	gaa	gga	acc	aag	865
	Pro	Pro	Lys	Thr	Lys	Val	Trp	Asp	Leu	Trp	Lys	Val	Glu	Gly	Thr	Lys	
			275					280					285				
75	aaa	gac	aac	act	aac	ttg	cca	tct	gag	cgc	tcc	atg	aca	cag	aat	ggt	913
	Lys	Asp	Asn	Thr	Asn	Leu	Pro	Ser	Glu	Arg	Ser	Met	Thr	Gln	Asn	Gly	
		290					295					300					
80	tat	gcc	gcc	att	gaa	tag	aactgttggt	gcagcggtta	cgccttttat								961

Tyr Ala Ala Ile Glu  
 305

5 atgtttattct ggtggtacct gtaaccatat aacgttgcat ttcctgtggt tgtaccattt 1021  
 ctctgataga ttttgaata atttgaaggc aaagatagat tattgtgtag agagctacaa 1081  
 atttaatgat aaattgatca tcagcactgg aaagctaaaa aaa 1124

10 <210> 6  
 <211> 309

15 <212> PRT  
 <213> Arabidopsis thaliana

20 <400> 6

Met Glu Met Ser Leu Arg Leu Ala Ser Ser Ser Thr Ser Asn Pro Ile  
 1 5 10 15

25 Cys Leu Leu Asn Pro Gly Lys Asn Leu Asn Phe Pro Ile Arg Asn His  
 20 25 30

30 Arg Ile Pro Lys Thr Ser Lys Pro Phe Cys Val Arg Ser Ser Met Ser  
 35 40 45

35 Leu Ser Lys Pro Pro Arg Gln Thr Leu Ser Ser Asn Trp Asp Val Ser  
 50 55 60

40 Ser Phe Ser Ile Asp Ser Val Ala Gln Ser Pro Ser Arg Leu Pro Ser  
 65 70 75 80

Phe Glu Glu Leu Asp Thr Thr Asn Met Leu Leu Arg Gln Arg Ile Val  
 85 90 95

45 Phe Leu Gly Ser Gln Val Asp Asp Met Thr Ala Asp Leu Val Ile Ser  
 100 105 110

50 Gln Leu Leu Leu Leu Asp Ala Glu Asp Ser Glu Arg Asp Ile Thr Leu  
 115 120 125

55 Phe Ile Asn Ser Pro Gly Gly Ser Ile Thr Ala Gly Met Gly Ile Tyr  
 130 135 140

60 Asp Ala Met Lys Gln Cys Lys Ala Asp Val Ser Thr Val Cys Leu Gly  
 145 150 155 160

Leu Ala Ala Ser Met Gly Ala Phe Leu Leu Ala Ser Gly Ser Lys Gly  
 165 170 175

5 Lys Arg Tyr Cys Met Pro Asn Ser Lys Val Met Ile His Gln Pro Leu  
 180 185 190

Gly Thr Ala Gly Gly Lys Ala Thr Glu Met Ser Ile Arg Ile Arg Glu  
 195 200 205

10 Met Met Tyr His Lys Ile Lys Leu Asn Lys Ile Phe Ser Arg Ile Thr  
 210 215 220

15 Gly Lys Pro Glu Ser Glu Ile Glu Ser Asp Thr Asp Arg Asp Asn Phe  
 225 230 235 240

20 Leu Asn Pro Trp Glu Ala Lys Glu Tyr Gly Leu Ile Asp Ala Val Ile  
 245 250 255

25 Asp Asp Gly Lys Pro Gly Leu Ile Ala Pro Ile Gly Asp Gly Thr Pro  
 260 265 270

Pro Pro Lys Thr Lys Val Trp Asp Leu Trp Lys Val Glu Gly Thr Lys  
 275 280 285

30 Lys Asp Asn Thr Asn Leu Pro Ser Glu Arg Ser Met Thr Gln Asn Gly  
 290 295 300

35 Tyr Ala Ala Ile Glu  
 305

40 <210> 7  
 <211> 1183  
 <212> DNA

45 <213> Arabidopsis thaliana

50 <220>  
 <221> CDS  
 <222> (3)..(902)

55 <223>

60 <400> 7  
 ct ttc ttc ttc ttc gct tca gcc atg gga acc cta tct ctc tca tct 47  
 Phe Phe Phe Phe Ala Ser Ala Met Gly Thr Leu Ser Leu Ser Ser  
 1 5 10 15  
 tct ctc aaa cct tca ctc gtt tca tca aga ctc aat tca tct tcc tcc 95

	Ser	Leu	Lys	Pro	Ser	Leu	Val	Ser	Ser	Arg	Leu	Asn	Ser	Ser	Ser	Ser	
				20						25					30		
5	gca	tct	tct	tct	tcg	ttt	cct	aaa	cca	aac	aat	ctc	tac	ctc	aaa	ccc	143
	Ala	Ser	Ser	Ser	Ser	Phe	Pro	Lys	Pro	Asn	Asn	Leu	Tyr	Leu	Lys	Pro	
				35				40				45					
10	acc	aaa	ctc	att	tca	cca	cct	ctc	aga	aca	act	tca	cca	tcg	cca	ttg	191
	Thr	Lys	Leu	Ile	Ser	Pro	Pro	Leu	Arg	Thr	Thr	Ser	Pro	Ser	Pro	Leu	
			50					55				60					
15	aga	ttc	gcc	aat	gct	tca	atc	gag	atg	tcg	cag	aca	cag	gaa	tca	gct	239
	Arg	Phe	Ala	Asn	Ala	Ser	Ile	Glu	Met	Ser	Gln	Thr	Gln	Glu	Ser	Ala	
		65					70				75						
20	att	cgc	gga	gct	gaa	tct	gac	gtc	atg	ggg	ctt	ctc	ctt	agg	gaa	cga	287
	Ile	Arg	Gly	Ala	Glu	Ser	Asp	Val	Met	Gly	Leu	Leu	Leu	Arg	Glu	Arg	
		80				85					90				95		
25	atc	gtc	ttt	ctc	ggg	agt	agt	atc	gac	gat	ttc	gtc	gct	gat	gct	att	335
	Ile	Val	Phe	Leu	Gly	Ser	Ser	Ile	Asp	Asp	Phe	Val	Ala	Asp	Ala	Ile	
				100						105					110		
30	atg	agt	cag	ttg	ctt	ctc	tta	gat	gct	aaa	gat	cca	aag	aaa	gat	atc	383
	Met	Ser	Gln	Leu	Leu	Leu	Leu	Asp	Ala	Lys	Asp	Pro	Lys	Lys	Asp	Ile	
				115					120					125			
35	aaa	ctc	ttt	atc	aat	tct	cct	ggg	ggg	tct	ctc	agt	gca	acc	atg	gct	431
	Lys	Leu	Phe	Ile	Asn	Ser	Pro	Gly	Gly	Ser	Leu	Ser	Ala	Thr	Met	Ala	
			130					135					140				
40	ata	tac	gat	gtg	gtt	cag	ctt	gtg	aga	gct	gat	gtt	tcg	acg	att	gct	479
	Ile	Tyr	Asp	Val	Val	Gln	Leu	Val	Arg	Ala	Asp	Val	Ser	Thr	Ile	Ala	
		145				150						155					
45	ctt	ggc	att	gct	gca	tca	aca	gct	tcg	att	att	ctt	ggg	gcg	gga	act	527
	Leu	Gly	Ile	Ala	Ala	Ser	Thr	Ala	Ser	Ile	Ile	Leu	Gly	Ala	Gly	Thr	
		160				165				170					175		
50	aaa	ggc	aag	cgc	ttt	gct	atg	ccc	aac	acg	agg	ata	atg	att	cat	caa	575
	Lys	Gly	Lys	Arg	Phe	Ala	Met	Pro	Asn	Thr	Arg	Ile	Met	Ile	His	Gln	
				180						185					190		
55	cct	ctt	gga	ggg	gca	agc	ggg	caa	gct	ata	gat	gtt	gag	att	caa	gct	623
	Pro	Leu	Gly	Gly	Ala	Ser	Gly	Gln	Ala	Ile	Asp	Val	Glu	Ile	Gln	Ala	
				195				200					205				
60	aag	gaa	gtt	atg	cat	aac	aag	aac	aat	gtc	acc	agc	att	atc	gcg	gga	671
	Lys	Glu	Val	Met	His	Asn	Lys	Asn	Asn	Val	Thr	Ser	Ile	Ile	Ala	Gly	
			210					215					220				
65	tgt	act	agt	cga	tcg	ttt	gag	cag	gtt	ctg	aaa	gat	att	gat	agg	gac	719
	Cys	Thr	Ser	Arg	Ser	Phe	Glu	Gln	Val	Leu	Lys	Asp	Ile	Asp	Arg	Asp	
		225				230						235					
70	cgg	tac	atg	tct	cca	att	gaa	gca	gtt	gag	tat	ggg	tta	att	gat	gga	767
	Arg	Tyr	Met	Ser	Pro	Ile	Glu	Ala	Val	Glu	Tyr	Gly	Leu	Ile	Asp	Gly	
		240				245				250					255		
75	gtt	att	gat	gga	gac	agc	att	att	cct	ctt	gaa	cct	gtt	cct	gat	aga	815
	Val	Ile	Asp	Gly	Asp	Ser	Ile	Ile	Pro	Leu	Glu	Pro	Val	Pro	Asp	Arg	
				260						265					270		
80	gtg	aaa	ccg	aga	gta	aac	tac	gag	gag	att	agc	aag	gat	ccg	atg	aaa	863

Val Lys Pro Arg Val Asn Tyr Glu Glu Ile Ser Lys Asp Pro Met Lys  
 275 280 285

5 ttc ttg act ccc gag ata cct gat gat gag atc tac taa agccaagctc 912  
 Phe Leu Thr Pro Glu Ile Pro Asp Asp Glu Ile Tyr  
 290 295

gtctagaagc agggatcttc aaatgtgact aagactagca gtttcgagga aaagctcaat 972  
 10 ttctttctgcg gttactggta ttggctttgc gaaaccgaag ctggtagtac ttggcttttg 1032  
 tatctcatat ttcagttggt cagaaaataa ttgttcttta aatcactctg ttttgaggaa 1092  
 15 aatgacttaa agaagctgta gttatctcgt ttatgacaat cccttcaagt gtttaaatgga 1152  
 ttcaagaagt atcagtcagt atttttgtgg t 1183

<210> 8  
 20 <211> 299  
 <212> PRT  
 25 <213> Arabidopsis thaliana

<400> 8  
 30 Phe Phe Phe Phe Ala Ser Ala Met Gly Thr Leu Ser Leu Ser Ser Ser  
 1 5 10 15

35 Leu Lys Pro Ser Leu Val Ser Ser Arg Leu Asn Ser Ser Ser Ser Ala  
 20 25 30

40 Ser Ser Ser Ser Phe Pro Lys Pro Asn Asn Leu Tyr Leu Lys Pro Thr  
 35 40 45

45 Lys Leu Ile Ser Pro Pro Leu Arg Thr Thr Ser Pro Ser Pro Leu Arg  
 50 55 60

Phe Ala Asn Ala Ser Ile Glu Met Ser Gln Thr Gln Glu Ser Ala Ile  
 65 70 75 80

50 Arg Gly Ala Glu Ser Asp Val Met Gly Leu Leu Leu Arg Glu Arg Ile  
 85 90 95

55 Val Phe Leu Gly Ser Ser Ile Asp Asp Phe Val Ala Asp Ala Ile Met  
 100 105 110

60 Ser Gln Leu Leu Leu Leu Asp Ala Lys Asp Pro Lys Lys Asp Ile Lys  
 115 120 125

Leu Phe Ile Asn Ser Pro Gly Gly Ser Leu Ser Ala Thr Met Ala Ile  
 130 135 140

5 Tyr Asp Val Val Gln Leu Val Arg Ala Asp Val Ser Thr Ile Ala Leu  
 145 150 155 160  
 Gly Ile Ala Ala Ser Thr Ala Ser Ile Ile Leu Gly Ala Gly Thr Lys  
 165 170 175  
 10 Gly Lys Arg Phe Ala Met Pro Asn Thr Arg Ile Met Ile His Gln Pro  
 180 185 190  
 15 Leu Gly Gly Ala Ser Gly Gln Ala Ile Asp Val Glu Ile Gln Ala Lys  
 195 200 205  
 20 Glu Val Met His Asn Lys Asn Asn Val Thr Ser Ile Ile Ala Gly Cys  
 210 215 220  
 25 Thr Ser Arg Ser Phe Glu Gln Val Leu Lys Asp Ile Asp Arg Asp Arg  
 225 230 235 240  
 Tyr Met Ser Pro Ile Glu Ala Val Glu Tyr Gly Leu Ile Asp Gly Val  
 245 250 255  
 30 Ile Asp Gly Asp Ser Ile Ile Pro Leu Glu Pro Val Pro Asp Arg Val  
 260 265 270  
 35 Lys Pro Arg Val Asn Tyr Glu Glu Ile Ser Lys Asp Pro Met Lys Phe  
 275 280 285  
 40 Leu Thr Pro Glu Ile Pro Asp Asp Glu Ile Tyr  
 290 295  
 <210> 9  
 45 <211> 1056  
 <212> DNA  
 50 <213> Arabidopsis thaliana  
 <220>  
 55 <221> CDS  
 <222> (61)..(876)  
 60 <223>  
 <400> 9  
 gagtaatttta gcatctatcc acgcctgaac ccgaaaaact ctgaaagctg agctctggtg

5	atg gcg ggt tta gca att tca cct cct ctc ggt ctt tcc ttc tct tct Met Ala Gly Leu Ala Ile Ser Pro Pro Leu Gly Leu Ser Phe Ser Ser 1 5 10 15	108
10	cga act cga aac cct aaa ccc act tcc ttt cta tct cac aat caa agg Arg Thr Arg Asn Pro Lys Pro Thr Ser Phe Leu Ser His Asn Gln Arg 20 25 30	156
15	aat cct ata aga cgt ata gtt tct gct cta cag agt cca tat gga gat Asn Pro Ile Arg Arg Ile Val Ser Ala Leu Gln Ser Pro Tyr Gly Asp 35 40 45	204
20	tct ctg aaa gct gga ctt tct agt aat gtt tct gga tcc cca ata aag Ser Leu Lys Ala Gly Leu Ser Ser Asn Val Ser Gly Ser Pro Ile Lys 50 55 60	252
25	att gac aac aag gct cca aga ttt gga gtg ata gag gcg aaa aag gga Ile Asp Asn Lys Ala Pro Arg Phe Gly Val Ile Glu Ala Lys Lys Gly 65 70 75 80	300
30	aac ccc cca gta atg cct tca gtg atg acc cct gga gga cct tta gac Asn Pro Pro Val Met Pro Ser Val Met Thr Pro Gly Gly Pro Leu Asp 85 90 95	348
35	ctc tct tct gtg tta ttc cgt aac cgc ata atc ttc atc ggg caa cca Leu Ser Ser Val Leu Phe Arg Asn Arg Ile Ile Phe Ile Gly Gln Pro 100 105 110	396
40	att aac gca cag gtt gct cag cga gtc ata tct cag ctt gta acc ctt Ile Asn Ala Gln Val Ala Gln Arg Val Ile Ser Gln Leu Val Thr Leu 115 120 125	444
45	gca tct att gat gat aaa tcc gac atc ctg atg tac ttg aat tgt ccc Ala Ser Ile Asp Asp Lys Ser Asp Ile Leu Met Tyr Leu Asn Cys Pro 130 135 140	492
50	ggg ggc agt act tac tcc gtc cta aca att tat gac tgt atg tct tgg Gly Gly Ser Thr Tyr Ser Val Leu Thr Ile Tyr Asp Cys Met Ser Trp 145 150 155 160	540
55	ata aag cct aaa gtt gga aca gtg gcg ttt gga gta gct gca agc caa Ile Lys Pro Lys Val Gly Thr Val Ala Phe Gly Val Ala Ala Ser Gln 165 170 175	588
60	gga gca ttt ttt ctt gct gga ggt gaa aaa gga atg cgt tat gca atg Gly Ala Phe Phe Leu Ala Gly Gly Glu Lys Gly Met Arg Tyr Ala Met 180 185 190	636
65	cca aat act cgt gtc atg ata cat caa cca caa act gga tgc gga gga Pro Asn Thr Arg Val Met Ile His Gln Pro Gln Thr Gly Cys Gly Gly 195 200 205	684
70	cat gta gag gac gtg agg aga cag gtc aat gaa gcc atc gaa gcc cga His Val Glu Asp Val Arg Arg Gln Val Asn Glu Ala Ile Glu Ala Arg 210 215 220	732
75	caa aaa att gac agg atg tat gca gct ttc act gga caa cct ctg gag Gln Lys Ile Asp Arg Met Tyr Ala Ala Phe Thr Gly Gln Pro Leu Glu 225 230 235 240	780
80	aaa gtg cag caa tac act gaa aga gat cgt ttc tta tca gca tct gag Lys Val Gln Gln Tyr Thr Glu Arg Asp Arg Phe Leu Ser Ala Ser Glu 245 250 255	828

gcg ttt gag ttc ggg ctc att gat ggt cta ttg gaa aca gaa tac tga 876  
 Ala Phe Glu Phe Gly Leu Ile Asp Gly Leu Leu Glu Thr Glu Tyr  
 260 265 270  
 5 agcagcatac aggacaatgc acaacaacag ctcattgcaa tgttcaaagc ttccattttc 936  
 atttgaatat gaacggttgt aactgatatt tgtgcataaa tcagtttggt tttcttggtt 996  
 10 ttattgtcta ctaaacagaa tgagaaaact aaactgttta tttttttact gaaaaatctg 1056  
  
 <210> 10  
 15 <211> 271  
 <212> PRT  
 <213> Arabidopsis thaliana  
 20  
  
 <400> 10  
 25 Met Ala Gly Leu Ala Ile Ser Pro Pro Leu Gly Leu Ser Phe Ser Ser  
 1 5 10 15  
 30 Arg Thr Arg Asn Pro Lys Pro Thr Ser Phe Leu Ser His Asn Gln Arg  
 20 25 30  
 Asn Pro Ile Arg Arg Ile Val Ser Ala Leu Gln Ser Pro Tyr Gly Asp  
 35 35 40 45  
 Ser Leu Lys Ala Gly Leu Ser Ser Asn Val Ser Gly Ser Pro Ile Lys  
 50 55 60  
 40 Ile Asp Asn Lys Ala Pro Arg Phe Gly Val Ile Glu Ala Lys Lys Gly  
 65 70 75 80  
 45 Asn Pro Pro Val Met Pro Ser Val Met Thr Pro Gly Gly Pro Leu Asp  
 85 90 95  
 50 Leu Ser Ser Val Leu Phe Arg Asn Arg Ile Ile Phe Ile Gly Gln Pro  
 100 105 110  
 Ile Asn Ala Gln Val Ala Gln Arg Val Ile Ser Gln Leu Val Thr Leu  
 115 120 125  
 55 Ala Ser Ile Asp Asp Lys Ser Asp Ile Leu Met Tyr Leu Asn Cys Pro  
 130 135 140  
 60 Gly Gly Ser Thr Tyr Ser Val Leu Thr Ile Tyr Asp Cys Met Ser Trp  
 145 150 155 160

	Ile Lys Pro Lys Val Gly Thr Val Ala Phe Gly Val Ala Ala Ser Gln	
	165 170 175	
5	Gly Ala Phe Phe Leu Ala Gly Gly Glu Lys Gly Met Arg Tyr Ala Met	
	180 185 190	
10	Pro Asn Thr Arg Val Met Ile His Gln Pro Gln Thr Gly Cys Gly Gly	
	195 200 205	
15	His Val Glu Asp Val Arg Arg Gln Val Asn Glu Ala Ile Glu Ala Arg	
	210 215 220	
20	Gln Lys Ile Asp Arg Met Tyr Ala Ala Phe Thr Gly Gln Pro Leu Glu	
	225 230 235 240	
25	Lys Val Gln Gln Tyr Thr Glu Arg Asp Arg Phe Leu Ser Ala Ser Glu	
	245 250 255	
30	Ala Phe Glu Phe Gly Leu Ile Asp Gly Leu Leu Glu Thr Glu Tyr	
	260 265 270	
	<210> 11	
	<211> 1448	
	<212> DNA	
35	<213> Nicotiana tabacum	
40	<220>	
	<221> CDS	
	<222> (2)..(1162)	
45	<223>	
50	<400> 11	
	g cgg ccg ctg gct tct tct ttg ctt ctc tct ccg ctt tot ago tcg acg	49
	Arg Pro Leu Ala Ser Ser Leu Leu Leu Ser Pro Leu Ser Ser Ser Thr	
	1 5 10 15	
55	gtt act gaa aat cgc gag ctg ggt tct ggt aaa tca act ttc ata tcc	97
	Val Thr Glu Asn Arg Glu Leu Gly Ser Gly Lys Ser Thr Phe Ile Ser	
	20 25 30	
60	agt ccc aat ttc tcc ttt gca act tct gtt cac agt tgc agg cca aac	145
	Ser Pro Asn Phe Ser Phe Ala Thr Ser Val His Ser Cys Arg Pro Asn	
	35 40 45	
	ggc gtt cga ggt tat tgt tac agg tct ccg gta ggt aag tct ttg gac	193
	Gly Val Arg Gly Tyr Cys Tyr Arg Ser Pro Val Ala Lys Ser Leu Asp	
	50 55 60	

5	cat ata ccc caa aaa ttc aga ctg gaa aat ctc aaa gat gga cta ctg	241
	His Ile Pro Gln Lys Phe Arg Leu Glu Asn Leu Lys Asp Gly Leu Leu	
	65 70 75 80	
10	gac aac tat aaa agt gcc cct cag tat ctt tac ggc ctt agt cct tca	289
	Asp Asn Tyr Lys Ser Ala Pro Gln Tyr Leu Tyr Gly Leu Ser Pro Ser	
	85 90 95	
15	cag atg gat atg ttc atg aca gaa gat aac cca gta cgg cga cag tca	337
	Gln Met Asp Met Phe Met Thr Glu Asp Asn Pro Val Arg Arg Gln Ser	
	100 105 110	
20	gaa agt gcc act gag gat agt ata tct tca gcc aat aac tat ctg agc	385
	Glu Ser Ala Thr Glu Asp Ser Ile Ser Ser Ala Asn Asn Tyr Leu Ser	
	115 120 125	
25	aat ggt gga atg tgg agt atg tcc ggc atg aac gat cgg ggc ccc tcg	433
	Asn Gly Gly Met Trp Ser Met Ser Gly Met Asn Asp Arg Gly Pro Ser	
	130 135 140	
30	aaa tac agt atg agt gtc agc atg tac cgt gga gga aca aga gga tct	481
	Lys Tyr Ser Met Ser Val Ser Met Tyr Arg Gly Gly Thr Arg Gly Ser	
	145 150 155 160	
35	gga aga cct cga act gcg cct cct gat ttg cca tct ttg ctt ttg gat	529
	Gly Arg Pro Arg Thr Ala Pro Pro Asp Leu Pro Ser Leu Leu Leu Asp	
	165 170 175	
40	gct cga att gtc tat ctg ggc atg cct att gta cca gct gtt aca gag	577
	Ala Arg Ile Val Tyr Leu Gly Met Pro Ile Val Pro Ala Val Thr Glu	
	180 185 190	
45	ctt ctt gtt gct cag ttt atg tgg ttg gat tat gac aat cca tca aag	625
	Leu Leu Val Ala Gln Phe Met Trp Leu Asp Tyr Asp Asn Pro Ser Lys	
	195 200 205	
50	cct ata tac cta tat ata aac tca tca ggc aca cag aat gag aag atg	673
	Pro Ile Tyr Leu Tyr Ile Asn Ser Ser Gly Thr Gln Asn Glu Lys Met	
	210 215 220	
55	gag act gtt ggg tct gaa aca gag gca tat gcc atc gct gac aca atg	721
	Glu Thr Val Gly Ser Glu Thr Glu Ala Tyr Ala Ile Ala Asp Thr Met	
	225 230 235 240	
60	gca tac tgc aaa tca gat atc tat aca gtg aac tgt ggc atg gca tat	769
	Ala Tyr Cys Lys Ser Asp Ile Tyr Thr Val Asn Cys Gly Met Ala Tyr	
	245 250 255	
65	ggt caa gca gca atg ctt ctg tca ctg gga aag aag ggg ttc cgt gct	817
	Gly Gln Ala Ala Met Leu Leu Ser Leu Gly Lys Lys Gly Phe Arg Ala	
	260 265 270	
70	atg cag cca aat tca tct aca aaa ttg tat tta cct aaa gtc agc aaa	865
	Met Gln Pro Asn Ser Ser Thr Lys Leu Tyr Leu Pro Lys Val Ser Lys	
	275 280 285	
75	tcc agt gga gca gtg ata gat atg tgg atc agg gcc aaa gaa cta gat	913
	Ser Ser Gly Ala Val Ile Asp Met Trp Ile Arg Ala Lys Glu Leu Asp	
	290 295 300	
80	gca aac act gag tat tac ctt gaa cta tta gcg aaa gga gtt gga aaa	961
	Ala Asn Thr Glu Tyr Tyr Leu Glu Leu Leu Ala Lys Gly Val Gly Lys	
	305 310 315 320	

	cca aag gaa gaa atc gag aaa gat att caa cgc cct aaa tat ctg ogg	1009
	Pro Lys Glu Glu Ile Glu Lys Asp Ile Gln Arg Pro Lys Tyr Leu Arg	
	325 330 335	
5	gca caa gaa gcc att gac tat ggc att gcg gac aag ata atc gat tca	1057
	Ala Gln Glu Ala Ile Asp Tyr Gly Ile Ala Asp Lys Ile Ile Asp Ser	
	340 345 350	
10	aga gac aat gca ttt gag aaa agg aac tat ggt gag ata ctc gcc caa	1105
	Arg Asp Asn Ala Phe Glu Lys Arg Asn Tyr Gly Glu Ile Leu Ala Gln	
	355 360 365	
15	tct aga gct atg agg aaa gcc gga cca ggt gct cag gct gct cca tct	1153
	Ser Arg Ala Met Arg Lys Ala Gly Pro Gly Ala Gln Ala Ala Pro Ser	
	370 375 380	
	ggc tcc agg tgactggaag agcggtaatg gtcccaagct ttcaggaaca	1202
20	Gly Ser Arg	
	385	
	actgttggtc ccttatagtt tcgaggaaca aagttgctgg ttacttggtc tgtgcggta	1262
25	taatgtaact gggacaaaga acatattgta gaaaccttgt ttgagctgtg aagtataggg	1322
	gttttacaac tattatgcac aggtctgcaa agagtaccca taatgtcaat tggttgtaac	1382
	agtatcaaac aatcagatag tgccagtgta tggataaat gaatatagat ctctctgagc	1442
30	ggccgc	1448
	<210> 12	
35	<211> 387	
	<212> PRT	
40	<213> Nicotiana tabacum	
	<400> 12	
45	Arg Pro Leu Ala Ser Ser Leu Leu Leu Ser Pro Leu Ser Ser Ser Thr	
	1 5 10 15	
50	Val Thr Glu Asn Arg Glu Leu Gly Ser Gly Lys Ser Thr Phe Ile Ser	
	20 25 30	
	Ser Pro Asn Phe Ser Phe Ala Thr Ser Val His Ser Cys Arg Pro Asn	
55	35 40 45	
	Gly Val Arg Gly Tyr Cys Tyr Arg Ser Pro Val Ala Lys Ser Leu Asp	
	50 55 60	
60	His Ile Pro Gln Lys Phe Arg Leu Glu Asn Leu Lys Asp Gly Leu Leu	
	65 70 75 80	

	Asp	Asn	Tyr	Lys	Ser	Ala	Pro	Gln	Tyr	Leu	Tyr	Gly	Leu	Ser	Pro	Ser	
					85					90					95		
5	Gln	Met	Asp	Met	Phe	Met	Thr	Glu	Asp	Asn	Pro	Val	Arg	Arg	Gln	Ser	
				100					105					110			
10	Glu	Ser	Ala	Thr	Glu	Asp	Ser	Ile	Ser	Ser	Ala	Asn	Asn	Tyr	Leu	Ser	
			115					120					125				
15	Asn	Gly	Gly	Met	Trp	Ser	Met	Ser	Gly	Met	Asn	Asp	Arg	Gly	Pro	Ser	
		130					135					140					
	Lys	Tyr	Ser	Met	Ser	Val	Ser	Met	Tyr	Arg	Gly	Gly	Thr	Arg	Gly	Ser	
	145					150					155					160	
20	Gly	Arg	Pro	Arg	Thr	Ala	Pro	Pro	Asp	Leu	Pro	Ser	Leu	Leu	Leu	Asp	
					165					170					175		
25	Ala	Arg	Ile	Val	Tyr	Leu	Gly	Met	Pro	Ile	Val	Pro	Ala	Val	Thr	Glu	
				180					185					190			
30	Leu	Leu	Val	Ala	Gln	Phe	Met	Trp	Leu	Asp	Tyr	Asp	Asn	Pro	Ser	Lys	
			195					200					205				
35	Pro	Ile	Tyr	Leu	Tyr	Ile	Asn	Ser	Ser	Gly	Thr	Gln	Asn	Glu	Lys	Met	
		210					215					220					
	Glu	Thr	Val	Gly	Ser	Glu	Thr	Glu	Ala	Tyr	Ala	Ile	Ala	Asp	Thr	Met	
	225					230					235					240	
40	Ala	Tyr	Cys	Lys	Ser	Asp	Ile	Tyr	Thr	Val	Asn	Cys	Gly	Met	Ala	Tyr	
					245					250					255		
45	Gly	Gln	Ala	Ala	Met	Leu	Leu	Ser	Leu	Gly	Lys	Lys	Gly	Phe	Arg	Ala	
				260					265					270			
50	Met	Gln	Pro	Asn	Ser	Ser	Thr	Lys	Leu	Tyr	Leu	Pro	Lys	Val	Ser	Lys	
			275					280					285				
55	Ser	Ser	Gly	Ala	Val	Ile	Asp	Met	Trp	Ile	Arg	Ala	Lys	Glu	Leu	Asp	
		290					295					300					
	Ala	Asn	Thr	Glu	Tyr	Tyr	Leu	Glu	Leu	Leu	Ala	Lys	Gly	Val	Gly	Lys	
	305					310					315					320	
60	Pro	Lys	Glu	Glu	Ile	Glu	Lys	Asp	Ile	Gln	Arg	Pro	Lys	Tyr	Leu	Arg	
					325					330					335		

Ala Gln Glu Ala Ile Asp Tyr Gly Ile Ala Asp Lys Ile Ile Asp Ser  
 340 345 350

5 Arg Asp Asn Ala Phe Glu Lys Arg Asn Tyr Gly Glu Ile Leu Ala Gln  
 355 360 365

10 Ser Arg Ala Met Arg Lys Ala Gly Pro Gly Ala Gln Ala Ala Pro Ser  
 370 375 380

Gly Ser Arg  
 385

15

<210> 13

<211> 1246

20 <212> DNA

<213> Arabidopsis thaliana

25

<220>

<221> CDS

30 <222> (38) .. (1030)

<223>

35

<400> 13  
 atttttcgcga gcttcocgtgt ccaagagctc ctgcacc atg gcg tct tgt tta caa 55  
 Met Ala Ser Cys Leu Gln  
 1 5

40 gca tcc atg aat tct ctg ctt cca cgc tct tct tct ttt tct oct cat 103  
 Ala Ser Met Asn Ser Leu Leu Pro Arg Ser Ser Ser Phe Ser Pro His  
 10 15 20

45 cct cct cta tct tcg aat tca tcc ggg aga aga aac ttg aag act ttt 151  
 Pro Pro Leu Ser Ser Asn Ser Ser Gly Arg Arg Asn Leu Lys Thr Phe  
 25 30 35

50 cgt tac gcc ttt cgc gcc aaa gcc tct gcc aaa atc cct atg cct ccg 199  
 Arg Tyr Ala Phe Arg Ala Lys Ala Ser Ala Lys Ile Pro Met Pro Pro  
 40 45 50

55 ata aat cca aag gat cct ttc ctc tcc acg ctc gct tct att gcc gcg 247  
 Ile Asn Pro Lys Asp Pro Phe Leu Ser Thr Leu Ala Ser Ile Ala Ala  
 55 60 65 70

aat tct ccg gaa aag ctt ctc aat cgg ccg gtt aac gct gat gtg ccg 295  
 Asn Ser Pro Glu Lys Leu Leu Asn Arg Pro Val Asn Ala Asp Val Pro  
 75 80 85

60 cca tat ctt gac atc ttt gac tcc cct cag ctc atg tct tct cct gca 343  
 Pro Tyr Leu Asp Ile Phe Asp Ser Pro Gln Leu Met Ser Ser Pro Ala  
 90 95 100

5	cag gtt gaa aga tca gtg gct tat aac gag cac cga ccg aga act cct	391
	Gln Val Glu Arg Ser Val Ala Tyr Asn Glu His Arg Pro Arg Thr Pro	
	105 110 115	
10	cca cca gac ttg cca tct atg ctt ctt gac ggg aga att gtt tac att	439
	Pro Pro Asp Leu Pro Ser Met Leu Leu Asp Gly Arg Ile Val Tyr Ile	
	120 125 130	
15	gga atg cct ctt gtg ccg gca gtg act gag cta gtt gtc gct gag cta	487
	Gly Met Pro Leu Val Pro Ala Val Thr Glu Leu Val Val Ala Glu Leu	
	135 140 145 150	
20	atg tat ctt cag tgg ctg gat ccc aag gaa ccc att tac att tac atc	535
	Met Tyr Leu Gln Trp Leu Asp Pro Lys Glu Pro Ile Tyr Ile Tyr Ile	
	155 160 165	
25	aac tcc aca ggg acc act cgt gat gat gga gag acg gtt gga atg gaa	583
	Asn Ser Thr Gly Thr Thr Arg Asp Asp Gly Glu Thr Val Gly Met Glu	
	170 175 180	
30	tca gaa ggg ttt gcg atc tat gac tct ttg atg caa ctt aaa aac gag	631
	Ser Glu Gly Phe Ala Ile Tyr Asp Ser Leu Met Gln Leu Lys Asn Glu	
	185 190 195	
35	gta cat aca gta tgt gtg gga gca gcc ata ggt cag gcc tgt cta tta	679
	Val His Thr Val Cys Val Gly Ala Ala Ile Gly Gln Ala Cys Leu Leu	
	200 205 210	
40	ctt tct gcg gga acc aag ggt aaa cgg ttt atg atg cca cat gcc aaa	727
	Leu Ser Ala Gly Thr Lys Gly Lys Arg Phe Met Met Pro His Ala Lys	
	215 220 225 230	
45	gcg atg att cag caa cca cgt gta cct tct tct ggg ttg atg cct gcc	775
	Ala Met Ile Gln Gln Pro Arg Val Pro Ser Ser Gly Leu Met Pro Ala	
	235 240 245	
50	agt gat gtc ctg att cgg gcc aaa gag gtc att aca aat agg gat ata	823
	Ser Asp Val Leu Ile Arg Ala Lys Glu Val Ile Thr Asn Arg Asp Ile	
	250 255 260	
55	ctt gtg gaa cta cta tca aag cat act ggg aat tcc gtg gag act gta	871
	Leu Val Glu Leu Leu Ser Lys His Thr Gly Asn Ser Val Glu Thr Val	
	265 270 275	
60	gct aac gta atg aga agg cca tat tac atg gat gca cca aaa gct aaa	919
	Ala Asn Val Met Arg Arg Pro Tyr Tyr Met Asp Ala Pro Lys Ala Lys	
	280 285 290	
65	gaa ttt gga gtc att gac agg att ctt tgg cgc ggt caa gaa aag att	967
	Glu Phe Gly Val Ile Asp Arg Ile Leu Trp Arg Gly Gln Glu Lys Ile	
	295 300 305 310	
70	att gcg gac gtg gtt cct tca gag gaa ttc gac aag aat gca ggg att	1015
	Ile Ala Asp Val Val Pro Ser Glu Glu Phe Asp Lys Asn Ala Gly Ile	
	315 320 325	
75	aaa agc gta gta tga gtctagtctt aagttttctt ggcctaaatc atactgcgtc	1070
	Lys Ser Val Val	
	330	
80	atggagaaga acaaataagac tgaccaaaat cacattggcc gcagactgcc ttgtttcaaa	1130
	tcacttggtta aatgtgaaca tgcgattagg agaatcatatc tttaaaggatc ttgaaatatt	1190

atgataaaaat tgtaatgtgt ttgttcgtta gcaatagtaa atacaatctt caactc 1246

5 <210> 14

<211> 330

<212> PRT

10

<213> Arabidopsis thaliana

15 <400> 14

Met Ala Ser Cys Leu Gln Ala Ser Met Asn Ser Leu Leu Pro Arg Ser  
1 5 10 15

20

Ser Ser Phe Ser Pro His Pro Pro Leu Ser Ser Asn Ser Ser Gly Arg  
20 25 30

25

Arg Asn Leu Lys Thr Phe Arg Tyr Ala Phe Arg Ala Lys Ala Ser Ala  
35 40 45

30

Lys Ile Pro Met Pro Pro Ile Asn Pro Lys Asp Pro Phe Leu Ser Thr  
50 55 60

35

Leu Ala Ser Ile Ala Ala Asn Ser Pro Glu Lys Leu Leu Asn Arg Pro  
65 70 75 80

Val Asn Ala Asp Val Pro Pro Tyr Leu Asp Ile Phe Asp Ser Pro Gln  
85 90 95

40

Leu Met Ser Ser Pro Ala Gln Val Glu Arg Ser Val Ala Tyr Asn Glu  
100 105 110

45

His Arg Pro Arg Thr Pro Pro Pro Asp Leu Pro Ser Met Leu Leu Asp  
115 120 125

50

Gly Arg Ile Val Tyr Ile Gly Met Pro Leu Val Pro Ala Val Thr Glu  
130 135 140

55

Leu Val Val Ala Glu Leu Met Tyr Leu Gln Trp Leu Asp Pro Lys Glu  
145 150 155 160

Pro Ile Tyr Ile Tyr Ile Asn Ser Thr Gly Thr Thr Arg Asp Asp Gly  
165 170 175

60

Glu Thr Val Gly Met Glu Ser Glu Gly Phe Ala Ile Tyr Asp Ser Leu  
180 185 190

Met Gln Leu Lys Asn Glu Val His Thr Val Cys Val Gly Ala Ala Ile  
 195 200 205

5 Gly Gln Ala Cys Leu Leu Leu Ser Ala Gly Thr Lys Gly Lys Arg Phe  
 210 215 220

10 Met Met Pro His Ala Lys Ala Met Ile Gln Gln Pro Arg Val Pro Ser  
 225 230 235 240

15 Ser Gly Leu Met Pro Ala Ser Asp Val Leu Ile Arg Ala Lys Glu Val  
 245 250 255

Ile Thr Asn Arg Asp Ile Leu Val Glu Leu Leu Ser Lys His Thr Gly  
 260 265 270

20 Asn Ser Val Glu Thr Val Ala Asn Val Met Arg Arg Pro Tyr Tyr Met  
 275 280 285

25 Asp Ala Pro Lys Ala Lys Glu Phe Gly Val Ile Asp Arg Ile Leu Trp  
 290 295 300

30 Arg Gly Gln Glu Lys Ile Ile Ala Asp Val Val Pro Ser Glu Glu Phe  
 305 310 315 320

35 Asp Lys Asn Ala Gly Ile Lys Ser Val Val  
 325 330

<210> 15

<211> 1236

40 <212> DNA

<213> Arabidopsis thaliana

45 <220>

<221> CDS

50 <222> (66)..(983)

<223>

55 <400> 15

agatcggttat cgtttcgggg tcacagggac ttctactctt tctctctctc tgcaacaaag 60

60 aagaa atg gag gta gca gca gcg act gcg acg agc ttc aca acg ctt cga 110

Met Glu Val Ala Ala Thr Ala Thr Ser Phe Thr Thr Leu Arg  
 1 5 10 15

gct cgt acg tca gcg att atc ccg tct tct aca cgt aat ctg aga tct 158

	Ala	Arg	Thr	Ser	Ala	Ile	Ile	Pro	Ser	Ser	Thr	Arg	Asn	Leu	Arg	Ser	
				20						25					30		
5	aaa	ccg	aga	ttt	tct	tca	tct	tca	tct	ctc	aga	gct	tct	ctt	tcg	aat	206
	Lys	Pro	Arg	Phe	Ser	Ser	Ser	Ser	Ser	Leu	Arg	Ala	Ser	Leu	Ser	Asn	
				35					40					45			
10	ggc	ttt	ctt	tcg	ccg	tat	acc	gga	gga	agc	atc	tct	agt	gac	tta	tgc	254
	Gly	Phe	Leu	Ser	Pro	Tyr	Thr	Gly	Gly	Ser	Ile	Ser	Ser	Asp	Leu	Cys	
			50					55					60				
15	ggc	gct	aag	ctt	cgt	gcg	gaa	tcg	ctt	aat	ccg	tta	aat	ttt	tcc	agt	302
	Gly	Ala	Lys	Leu	Arg	Ala	Glu	Ser	Leu	Asn	Pro	Leu	Asn	Phe	Ser	Ser	
		65					70				75						
20	tcc	aag	cct	aaa	cgc	gga	gtt	gtc	act	atg	gtt	ata	cct	ttc	tca	aag	350
	Ser	Lys	Pro	Lys	Arg	Gly	Val	Val	Thr	Met	Val	Ile	Pro	Phe	Ser	Lys	
	80					85				90						95	
25	gga	agt	gca	cac	gaa	caa	cct	cct	cct	gat	ttg	gca	tca	tat	ttg	ttc	398
	Gly	Ser	Ala	His	Glu	Gln	Pro	Pro	Pro	Asp	Leu	Ala	Ser	Tyr	Leu	Phe	
				100						105					110		
30	aag	aac	cga	att	gta	tat	ttg	gga	atg	tct	ctc	gta	cct	tca	gtt	act	446
	Lys	Asn	Arg	Ile	Val	Tyr	Leu	Gly	Met	Ser	Leu	Val	Pro	Ser	Val	Thr	
				115				120						125			
35	gag	ttg	ata	ctt	gcg	gag	ttt	ctt	tac	ctt	cag	tat	gaa	gac	gag	gaa	494
	Glu	Leu	Ile	Leu	Ala	Glu	Phe	Leu	Tyr	Leu	Gln	Tyr	Glu	Asp	Glu	Glu	
			130				135						140				
40	aag	cct	att	tac	ctt	tac	ata	aac	tcg	act	ggg	aca	acc	aag	aat	ggc	542
	Lys	Pro	Ile	Tyr	Leu	Tyr	Ile	Asn	Ser	Thr	Gly	Thr	Thr	Lys	Asn	Gly	
		145					150				155						
45	gaa	aag	ttg	ggc	tat	gat	act	gag	gct	ttt	gca	atc	tat	gat	gtc	atg	590
	Glu	Lys	Leu	Gly	Tyr	Asp	Thr	Glu	Ala	Phe	Ala	Ile	Tyr	Asp	Val	Met	
	160					165				170						175	
50	ggg	tat	gtc	aaa	cca	cca	atc	ttt	act	ctt	tgc	gtc	ggg	aat	gcg	tgg	638
	Gly	Tyr	Val	Lys	Pro	Pro	Ile	Phe	Thr	Leu	Cys	Val	Gly	Asn	Ala	Trp	
				180						185					190		
55	ggc	gaa	gct	gct	ttg	ctt	ctg	act	gct	ggc	gca	aaa	gga	aat	cga	tot	686
	Gly	Glu	Ala	Ala	Leu	Leu	Leu	Thr	Ala	Gly	Ala	Lys	Gly	Asn	Arg	Ser	
				195				200						205			
60	gcg	ttg	ccc	tca	tca	act	att	atg	ata	aag	cag	ccc	att	gct	cga	ttt	734
	Ala	Leu	Pro	Ser	Ser	Thr	Ile	Met	Ile	Lys	Gln	Pro	Ile	Ala	Arg	Phe	
			210					215					220				
65	caa	ggc	caa	gca	act	gat	gtt	gaa	att	gca	agg	aaa	gaa	atc	aag	cac	782
	Gln	Gly	Gln	Ala	Thr	Asp	Val	Glu	Ile	Ala	Arg	Lys	Glu	Ile	Lys	His	
		225					230					235					
70	ata	aag	aca	gaa	atg	gtc	aag	ctg	tat	tca	aag	cat	att	ggc	aaa	tcc	830
	Ile	Lys	Thr	Glu	Met	Val	Lys	Leu	Tyr	Ser	Lys	His	Ile	Gly	Lys	Ser	
	240					245				250						255	
75	ccg	gag	cag	att	gaa	gct	gac	atg	aaa	cgc	ccg	aaa	tat	ttt	agt	ccc	878
	Pro	Glu	Gln	Ile	Glu	Ala	Asp	Met	Lys	Arg	Pro	Lys	Tyr	Phe	Ser	Pro	
				260						265						270	
80	act	gag	gct	gtt	gaa	tat	ggg	atc	att	gat	aag	gtg	gtt	tac	aat	gaa	926

Thr Glu Ala Val Glu Tyr Gly Ile Ile Asp Lys Val Val Tyr Asn Glu  
 275 280 285

5 agg ggc agc caa gac aga gga gtt gtg tct gac ctt aaa aag gca caa 974  
 Arg Gly Ser Gln Asp Arg Gly Val Val Ser Asp Leu Lys Lys Ala Gln  
 290 295 300

10 ctc att tga atgtcagaac tgtcttccga aatcccatga ttaacaggtt 1023  
 Leu Ile  
 305

ggagatctta ccgctgatca aatgggggaat cagtgaacca ttcaccggca cagaactgag 1083

15 gtaaagtctg gaaaacatgt taaaaaagggt tactagtaat gctgcaattg taggggttatt 1143  
 tgaacagaaa caaaccata tgtgtaggct tgtgaatgcc tagaaacagg attggtgtat 1203  
 cttcaatata tgtttctaag atgaatcaat ttc 1236

20 <210> 16  
 <211> 305

25 <212> PRT  
 <213> Arabidopsis thaliana

30 <400> 16

35 Met Glu Val Ala Ala Ala Thr Ala Thr Ser Phe Thr Thr Leu Arg Ala  
 1 5 10 15

Arg Thr Ser Ala Ile Ile Pro Ser Ser Thr Arg Asn Leu Arg Ser Lys  
 20 25 30

40 Pro Arg Phe Ser Ser Ser Ser Ser Leu Arg Ala Ser Leu Ser Asn Gly  
 35 40 45

45 Phe Leu Ser Pro Tyr Thr Gly Gly Ser Ile Ser Ser Asp Leu Cys Gly  
 50 55 60

50 Ala Lys Leu Arg Ala Glu Ser Leu Asn Pro Leu Asn Phe Ser Ser Ser  
 65 70 75 80

55 Lys Pro Lys Arg Gly Val Val Thr Met Val Ile Pro Phe Ser Lys Gly  
 85 90 95

Ser Ala His Glu Gln Pro Pro Pro Asp Leu Ala Ser Tyr Leu Phe Lys  
 100 105 110

60 Asn Arg Ile Val Tyr Leu Gly Met Ser Leu Val Pro Ser Val Thr Glu  
 115 120 125

## 25

Leu Ile Leu Ala Glu Phe Leu Tyr Leu Gln Tyr Glu Asp Glu Glu Lys  
 130 135 140

5 Pro Ile Tyr Leu Tyr Ile Asn Ser Thr Gly Thr Thr Lys Asn Gly Glu  
 145 150 155 160

10 Lys Leu Gly Tyr Asp Thr Glu Ala Phe Ala Ile Tyr Asp Val Met Gly  
 165 170 175

15 Tyr Val Lys Pro Pro Ile Phe Thr Leu Cys Val Gly Asn Ala Trp Gly  
 180 185 190

Glu Ala Ala Leu Leu Leu Thr Ala Gly Ala Lys Gly Asn Arg Ser Ala  
 195 200 205

20 Leu Pro Ser Ser Thr Ile Met Ile Lys Gln Pro Ile Ala Arg Phe Gln  
 210 215 220

25 Gly Gln Ala Thr Asp Val Glu Ile Ala Arg Lys Glu Ile Lys His Ile  
 225 230 235 240

30 Lys Thr Glu Met Val Lys Leu Tyr Ser Lys His Ile Gly Lys Ser Pro  
 245 250 255

35 Glu Gln Ile Glu Ala Asp Met Lys Arg Pro Lys Tyr Phe Ser Pro Thr  
 260 265 270

Glu Ala Val Glu Tyr Gly Ile Ile Asp Lys Val Val Tyr Asn Glu Arg  
 275 280 285

40 Gly Ser Gln Asp Arg Gly Val Val Ser Asp Leu Lys Lys Ala Gln Leu  
 290 295 300

45 Ile  
 305

50 <210> 17  
 <211> 906  
 <212> DNA

55 <213> Nicotiana tabacum

60 <220>  
 <221> CDS  
 <222> (45) .. (755)

<223>

[illegible]

aat gaa gcc aaa gaa aaa ggt tca agc tagaaaaatt gctgtaatac 775  
 Asn Glu Ala Lys Glu Lys Gly Ser Ser  
 230 235  
 5 tgatctcatt gcagtctttg ttagcattta ccacgcctaa ctagttctcc attttactta 835  
 ctgggtgtatt tactttctag tattttattt gatgaggcga tacctcatta ctttgttttc 895  
 10 tcagcggccg c 906  
  
 <210> 18  
 15 <211> 237  
 <212> PRT  
 <213> Nicotiana tabacum  
 20  
  
 <400> 18  
 25 Met Arg Thr Gln Ile Val His Lys Leu Phe Asn Arg Arg Ile Asn Gly  
 1 5 10 15  
 30 Thr Pro Leu Asn Ser Ser Lys Arg Phe Tyr Gly Val Ile Pro Met Val  
 20 25 30  
 35 Ile Glu His Ser Ser Arg Gly Glu Arg Ala Tyr Asp Ile Phe Ser Arg  
 35 40 45  
 40 Leu Leu Lys Glu Arg Ile Ile Cys Ile Asn Gly Pro Ile Asp Asp Ser  
 50 55 60  
 45 Thr Ser His Val Val Val Ala Gln Leu Leu Phe Leu Glu Ser Glu Asn  
 65 70 75 80  
 50 Pro Ser Lys Pro Ile His Lys Tyr Leu Asn Ser Pro Gly Gly Ala Val  
 85 90 95  
 55 Thr Ala Gly Leu Ala Ile Tyr Asp Thr Thr Gln Tyr Ile Arg Ser Pro  
 100 105 110  
 60 Ile His Thr Ile Cys Leu Gly Gln Ala Ala Ser Met Gly Ser Leu Leu  
 115 120 125  
 Leu Ala Ala Gly Ala Lys Gly Glu Arg Arg Ser Leu Pro Asn Ala Ser  
 130 135 140  
 60 Val Met Ile His Gln Pro Phe Gly Gly Tyr Ser Gly Gln Ala Lys Asp  
 145 150 155 160

Leu Thr Ile His Thr Lys Gln Ile Val Arg Val Trp Asp Thr Leu Asn  
 165 170 175

5 Asp Leu Tyr Ala Lys His Thr Gly Gln Pro Ile Glu Ile Ile Gln Lys  
 180 185 190

10 Asn Met Asp Arg Asp Tyr Phe Met Thr Pro Glu Glu Ala Lys Glu Phe  
 195 200 205

15 Gly Ile Ile Asp Glu Val Ile Asp Glu Arg Pro Met Ala Leu Val Thr  
 210 215 220

Asp Ala Val Ala Asn Glu Ala Lys Glu Lys Gly Ser Ser  
 225 230 235

20 <210> 19  
 <211> 447

25 <212> DNA  
 <213> Nicotiana tabacum

30 <400> 19  
 gcggccgctt gcggacaaga taatcgattc aagagacaat gtatttgaga aaaggaacta 60  
 tgatgagata ctgcaccaat ctagagctat gaggaagacc ggaccaggtg ctgaggctgc 120  
 35 tccatctggc ttcaggtgac tggaagagcg gtaatggtcc caaactttca ggaacaactg 180  
 ttgttccctt atagtttoga ggaacaaagt tgctgggttac ttggtctgtg ccggtataat 240  
 40 gtaactggga caaagaacat attgtagaaa ccttgtttga gctgtgaagt ataggggttt 300  
 tacaactatt atgcacaggt ctgcaaagag taccataat gtcaattggt tgtaccagta 360  
 tcaaacaatc agatagtgcc agtgtatggt ataaatgaat atagatctct ctgatgtcat 420  
 45 ttttctttta tcatgttcag cggccgc 447

50 <210> 20  
 <211> 996  
 <212> DNA

55 <213> Nicotiana tabacum

60 <400> 20  
 gcggccgctt gcggacaaga taatcgattc aagagacaat gtatttgaga aaaggaacta 60  
 tgatgagata ctgcaccaat ctagagctat gaggaagacc ggaccaggtg ctgaggctgc 120  
 tccatctggc ttcaggtgac tggaagagcg gtaatggtcc caaactttca ggaacaactg 180

	ttgttccctt atagtttcga ggaacaaagt tgctgggttac ttggtctgtg ccggtataat	240
5	gtaactggga caaagaacat attgtagaaa ccttgtttga gctgtgaagt ataggggttt	300
	tacaactatt atgcacaggt ctgcaaagag tacccataat gtcaattggt tgtaccaggc	360
	ggccgctggc ttcttctttg cttctctctc cgctttctag ctcgacgggt actgaaaatc	420
10	gcgagctggg ttctggtaaa tcaactttca tatccagtcc caatttctcc tttgcaactt	480
	ctgttcacag ttgcaggcca aacggcggtc gaggttattg ttacaggtct ccggtagcta	540
15	agtctttgga ccatataccc caaaaattca gactggaaaa tctcaaagat ggactactgg	600
	acaactataa aagtgcacct cagtatcttt acggccttag tccttcacag atggatatgt	660
	tcatgacaga agataaccca gtacggcgac agtcagaaag tgccactgag gatagtatat	720
20	ctgcggccgc tggcagatgc tccacgaarg gataccacag caggtcttgg ttagtccata	780
	cacatcgtat aatttatggc tgatagtggg tgtacgactt gcagtgttat tttgcaattt	840
25	cttttgttta atctacatat tgaactcttt tgatctactt attcaaaaac atgaaatcct	900
	gagcagacta gatgcatttg tttaatatca tgaatgcaag gaatccacct acagctgata	960
	tgtatacaaa gatacctttt tttcaagagc ggccgc	996
30	<210> 21	
	<211> 602	
35	<212> DNA	
	<213> Nicotiana tabacum	
40	<220>	
	<221> CDS	
45	<222> (2)..(193)	
	<223>	
50	<400> 21	
	g cgg ccg ctg gaa gat gtg cgg cgc caa gtg aac gaa gcg gtt caa cct	49
	Arg Pro Leu Glu Asp Val Arg Arg Gln Val Asn Glu Ala Val Gln Pro	
	1 5 10 15	
55	cgt cat aaa atc gac aag atg tat gtc gcc ttt act gac caa cca att	97
	Arg His Lys Ile Asp Lys Met Tyr Val Ala Phe Thr Asp Gln Pro Ile	
	20 25 30	
60	gag aag gtg caa cag tac act gaa agg gat cgt ttt ttg tct gtc tca	145
	Glu Lys Val Gln Gln Tyr Thr Glu Arg Asp Arg Phe Leu Ser Val Ser	
	35 40 45	
	gag gcc atg gag ttt ggt ctc ata gat ggg gtg cta gaa aca gaa tac	193

## 30

Glu Ala Met Glu Phe Gly Leu Ile Asp Gly Val Leu Glu Thr Glu Tyr  
 50 55 60

5 tagttgcaaa tgaatcttta gtagtacatg gtagctagcc ttccaatgac gaaaaagctg 253  
 gtgttgctca ttaaccactt cgaagtacaa gaagctggct cttgcaaatt tgtatcgtag 313  
 aaatatctca actcttcaat ccaggaatgt ccaaaagcct aattctgaag acggttatag 373  
 10 aaagcgctct tgttttacta tttttgtctc tcctgcagat aactcagca cttttgtggg 433  
 tattaatcag ggtcttaatt catcacttaa tcacaatcca gttggaagcg aagtgatcaa 493  
 15 acacaaagca gattcaggaa gatgtgtatt tttcccaa atattact ccaattgcta 553  
 tcatcccttc gctgtcggtta tgaaaggata tttattttat agcggccgc 602

20 <210> 22  
 <211> 64  
 <212> PRT  
 25 <213> Nicotiana tabacum

30 <400> 22  
 Arg Pro Leu Glu Asp Val Arg Arg Gln Val Asn Glu Ala Val Gln Pro  
 1 5 10 15

35 Arg His Lys Ile Asp Lys Met Tyr Val Ala Phe Thr Asp Gln Pro Ile  
 20 25 30

40 Glu Lys Val Gln Gln Tyr Thr Glu Arg Asp Arg Phe Leu Ser Val Ser  
 35 40 45

45 Glu Ala Met Glu Phe Gly Leu Ile Asp Gly Val Leu Glu Thr Glu Tyr  
 50 55 60

50 <210> 23  
 <211> 16  
 <212> DNA  
 <213> artificial sequence

55 <220>  
 <223> primer  
 60 <400> 23  
 agaattcgcg gccgct

<210> 24  
<211> 32  
5 <212> DNA  
<213> artificial sequence  
10  
<220>  
<223> primer  
15 <400> 24  
ctcatgcgggc cgcgcgcaac gcaattaatg tg 32  
20  
<210> 25  
<211> 32  
<212> DNA  
25 <213> artificial sequence  
30  
<220>  
<223> primer  
<400> 25  
35 tcatgcgggc gcgagatcca gttcgatgta ac 32  
40  
<210> 26  
<211> 21  
<212> DNA  
<213> artificial sequence  
45  
<220>  
<223> primer  
50 <400> 26  
gtggattgat gtgatatctc c 21  
55 <210> 27  
<211> 21  
<212> DNA  
60 <213> artificial sequence

<220>  
<223> primer  
5 <400> 27  
gtaaggatct gagctacaca t 21  
  
10 <210> 28  
<211> 24  
<212> DNA  
15 <213> artificial sequence  
  
20 <220>  
<223> primer  
<400> 28  
25 tataaccatgg atttgccatc ttg 24  
  
<210> 29  
<211> 21  
30 <212> DNA  
<213> artificial sequence  
35  
  
<220>  
<223> primer  
40 <400> 29  
atagatctca cctggagcca g 21  
  
45 <210> 30  
<211> 19  
<212> DNA  
50 <213> artificial sequence  
  
55 <220>  
<223> primer  
<400> 30  
60 gagcccatgg caagaggag 19  
  
<210> 31

<211> 22  
<212> DNA  
5 <213> artificial sequence

<220>  
10 <223> primer  
<400> 31  
15 atagatcttt ctagcttgaa cc 22

<210> 32  
<211> 21  
20 <212> DNA  
<213> artificial sequence  
25

<220>  
<223> primer  
30 <400> 32  
tcagccatgg cccctggagg a 21

<210> 33  
<211> 24  
<212> DNA  
40 <213> artificial sequence

<220>  
45 <223> primer  
<400> 33  
50 taagatcttc agtattctgt ttcc 24